

**Coulomb excitation 2003Lo01,1997Lo05**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 126, 151 (2015)	1-Feb-2015

1997Lo05: (<sup>32</sup>S,<sup>32</sup>S') with E(<sup>32</sup>S)=125 MeV and (<sup>58</sup>Ni,<sup>58</sup>Ni') with E(<sup>58</sup>Ni)=225 MeV. Measured E<sub>γ</sub>, I<sub>γ</sub>, γγ, and γ-particle coincidences using 24 PIN diodes and 5 Compton-suppressed Ge detectors for the <sup>32</sup>S beam experiment and 55 PIN diodes and the NORDBALL array for the <sup>58</sup>Ni experiment. Similar results also presented in 1996Lo19.

2003Lo01: (<sup>58</sup>Ni,<sup>58</sup>Ni'), E(<sup>58</sup>Ni)=225 MeV. Measured E<sub>γ</sub>, I<sub>γ</sub>, γγ, and particle-γ coincidences using NORDBALL array consisting of 20 Ge detectors and 55 PIN diodes placed at backwards angles. Also used <sup>36</sup>S at E=1.8-3.5 MeV/nucleon and <sup>64</sup>Ni at E=2.0-2.4 MeV/nucleon for activation experiments. Earlier results presented in 1999Lo13.

Others: (<sup>136</sup>Xe,<sup>136</sup>Xe'), 2001Sc22, 1997Vo11; (p,p'), (α,α'), 1998Sc36, 1997Sc18; (<sup>32</sup>S,<sup>32</sup>S'), (<sup>36</sup>S,<sup>36</sup>S'), 1994Sc26.

α: Additional information 1.

<sup>180</sup>Ta Levels

E(level) <sup>†</sup>	J <sup>π</sup> <sup>‡</sup>	Comments
77.1 <sup>#a</sup> 8	9 <sup>-</sup> <sup>#</sup>	Additional information 2.
280.20 <sup>a</sup> 10	10 <sup>-</sup>	
505.50 <sup>a</sup> 12	11 <sup>-</sup>	
752.9 <sup>a</sup> 3	12 <sup>-</sup>	
1021.4 <sup>a</sup> 3	13 <sup>-</sup>	
1136.1? <sup>&amp;</sup> 10	(7 <sup>-</sup> ) <sup>&amp;</sup>	
1291.2? <sup>&amp;</sup> 10	(8 <sup>-</sup> ) <sup>&amp;</sup>	
1310.7 <sup>a</sup> 4	14 <sup>-</sup>	
1339.1 <sup>@</sup> 10	11 <sup>-</sup> <sup>@</sup>	
1450? <sup>&amp;</sup>	(9 <sup>-</sup> ) <sup>&amp;</sup>	
1546.2 <sup>@</sup> 10	12 <sup>-</sup> <sup>@</sup>	
1620.0 <sup>a</sup> 5	15 <sup>-</sup>	
1947.7 <sup>a</sup> 7	16 <sup>-</sup>	

<sup>†</sup> From a least-squares fit to E<sub>γ</sub> by evaluator.

<sup>‡</sup> As proposed by 1997Lo05 and based on assumed band structure, except where noted.

<sup>#</sup> From the Adopted Levels.

<sup>@</sup> From 2003Lo01.

<sup>&</sup> From from 2003Lo01; due to tentative assignment, level is not included in the Adopted Levels.

<sup>a</sup> Band(A): Rotational band build on 9<sup>-</sup> isomer.

γ(<sup>180</sup>Ta)

E <sub>i</sub> (level)	J <sub>i</sub> <sup>π</sup>	E <sub>γ</sub> <sup>†</sup>	I <sub>γ</sub>	E <sub>f</sub>	J <sub>f</sub> <sup>π</sup>	Mult. <sup>@</sup>	α
280.20	10 <sup>-</sup>	203.1 1		77.1	9 <sup>-</sup>		
505.50	11 <sup>-</sup>	225.3 1	100	280.20	10 <sup>-</sup>	(M1)	0.441
		428.4 2	22.1 10	77.1	9 <sup>-</sup>	(E2)	0.0300
752.9	12 <sup>-</sup>	247.4 6	100	505.50	11 <sup>-</sup>	(M1)	0.341 6
		472.7 6	49 11	280.20	10 <sup>-</sup>	(E2)	0.0232
1021.4	13 <sup>-</sup>	268.5 3	100	752.9	12 <sup>-</sup>	(M1)	0.273
		515.9 3	85 12	505.50	11 <sup>-</sup>	(E2)	0.0186
1136.1?	(7 <sup>-</sup> )	1059 <sup>#</sup>		77.1	9 <sup>-</sup>		
1291.2?	(8 <sup>-</sup> )	1011 <sup>#</sup>		280.20	10 <sup>-</sup>		
1310.7	14 <sup>-</sup>	289.2 3	100	1021.4	13 <sup>-</sup>	(M1)	0.223

Continued on next page (footnotes at end of table)

**Coulomb excitation 2003Lo01,1997Lo05 (continued)** $\gamma(^{180}\text{Ta})$  (continued)

$E_i(\text{level})$	$J_i^\pi$	$E_\gamma^\dagger$	$I_\gamma$	$E_f$	$J_f^\pi$	Mult. @	$\alpha$
1310.7	14 <sup>-</sup>	558.0 4	102 34	752.9	12 <sup>-</sup>	(E2)	0.01540
1339.1	11 <sup>-</sup>	1262 <sup>‡</sup>		77.1	9 <sup>-</sup>		
1450?	(9 <sup>-</sup> )	947 <sup>#&amp;</sup>		505.50	11 <sup>-</sup>		
1546.2	12 <sup>-</sup>	1266 <sup>‡</sup>		280.20	10 <sup>-</sup>		
1620.0	15 <sup>-</sup>	309.1 5	100	1310.7	14 <sup>-</sup>	(M1)	0.186
		598.7 4	92 46	1021.4	13 <sup>-</sup>	(E2)	0.01303
1947.7	16 <sup>-</sup>	327.4 9	100	1620.0	15 <sup>-</sup>	(M1)	0.159 3
		637.1 7	140 90	1310.7	14 <sup>-</sup>	(E2)	0.01128

<sup>†</sup> From 1997Lo05, except where noted.

<sup>‡</sup> From 2003Lo01.

<sup>#</sup> From 2003Lo01; due to tentative assignment  $\gamma$  is not included in the Adopted Gammas.

@ As proposed by 1997Lo05 based on assumed rotational band structure.

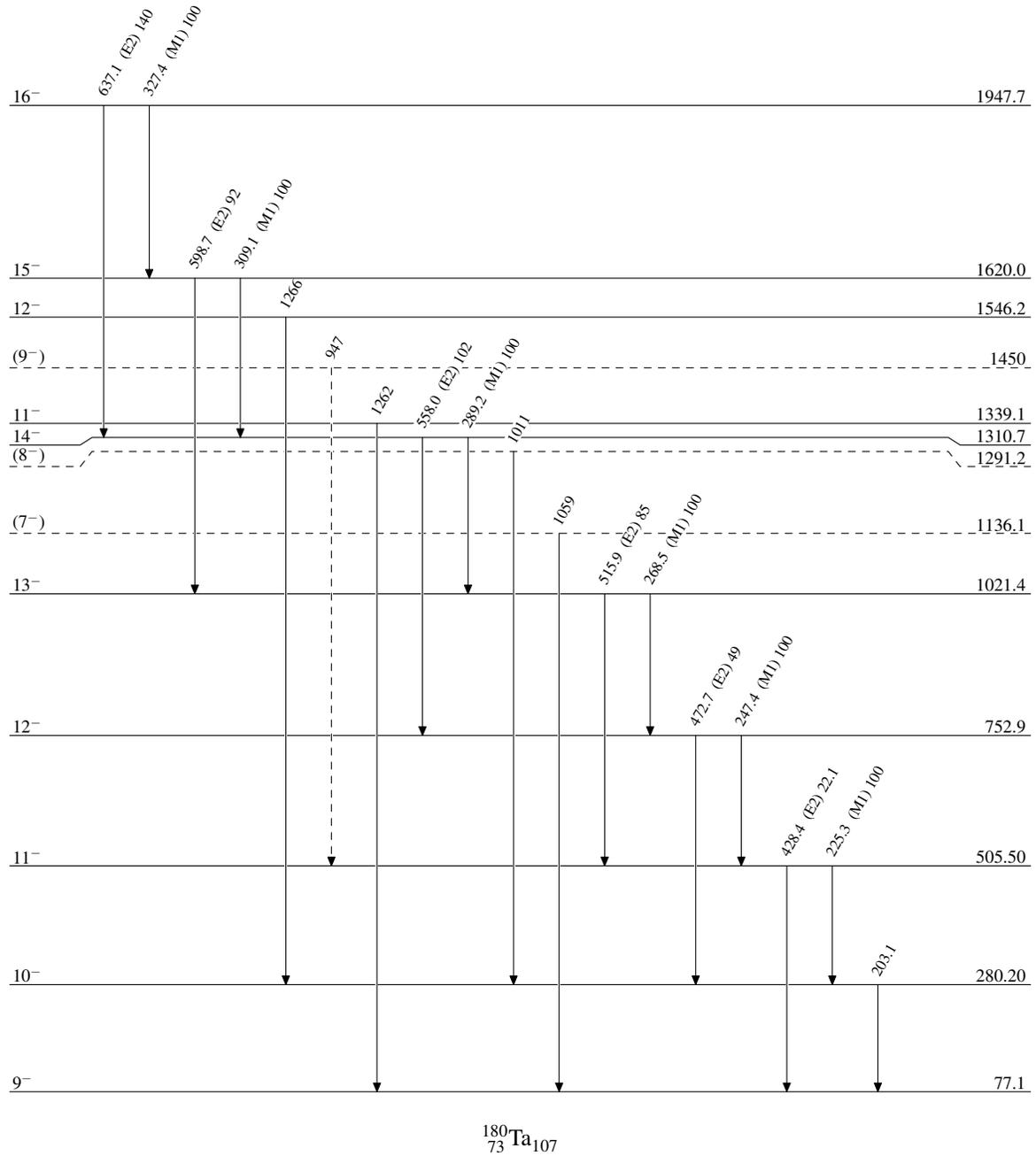
& Placement of transition in the level scheme is uncertain.

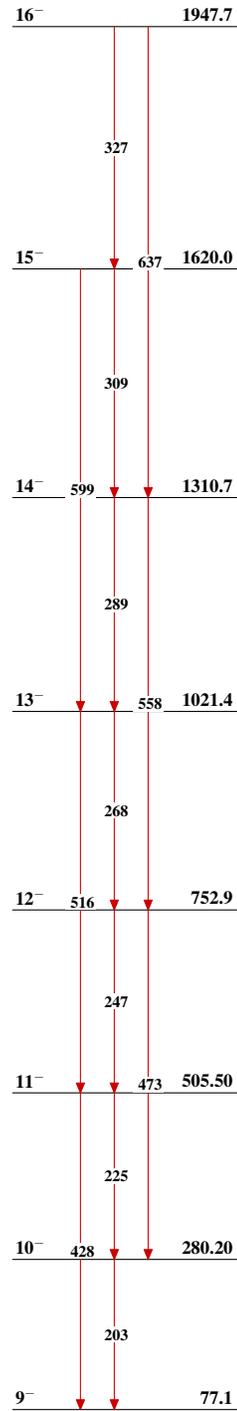
**Coulomb excitation 2003Lo01,1997Lo05**

Legend

Level Scheme

Intensities: Relative photon branching from each level

-----▶  $\gamma$  Decay (Uncertain)

**Coulomb excitation 2003Lo01,1997Lo05****Band(A): Rotational band build on  
9<sup>-</sup> isomer** $^{180}_{73}\text{Ta}_{107}$